

What is claimed is:

1. A system for controlling navigation of a data file, comprising:  
  
an input device having a user-actuated input mechanism for generating signals representative of input events;  
  
detection means for detecting a rate of user actuation of said mechanism;  
  
determination means for determining a data file navigation rate representing a navigation amount per input event as an increasing exponential function of the detected rate of user actuation; and  
  
output means for outputting control signals indicative of said navigation rate.
2. The system of claim 1, wherein said determination means rounds the data file navigation rate up to a predetermined level when the data file navigation rate would otherwise be less than the predetermined level.
3. The system of claim 1, wherein:  
  
said navigation comprises scrolling of a display;  
  
said user-actuated input mechanism comprises a rotational member;  
  
said rate of user actuation is a rotational speed of said rotational member; and  
  
said data file navigation rate is a scroll rate.
4. The system according to claim 3, wherein said rotational member comprises a wheel.
5. The system according to claim 3, wherein the system is adapted to monitor a direction of rotation of the rotational member, and when the direction of rotation of the rotational member changes the scroll rate is fixed at a default value for a predetermined amount of time.
6. The system according to claim 3, wherein the system is adapted to monitor a direction of rotation of the rotational member, and wherein a first exponential function is

used when scrolling in a first direction and a second exponential function, different from said first exponential function, is used when scrolling in a second direction.

7. A method for controlling navigation of a data file, comprising the steps of:

detecting a rate of user actuation of a user-actuated input mechanism that generates signals representative of input events on an input device;

determining a data file navigation rate representing a navigation amount per input event as an increasing exponential function of the detected rate of user actuation; and

outputting control signals indicative of said navigation rate.

8. The method of claim 7, further comprising the step of rounding the data file navigation rate up to a predetermined level when the data file navigation rate would otherwise be less than the predetermined level.

9. The method of claim 7, wherein:

said navigation comprises scrolling of a display;

said user-actuated input mechanism comprises a rotational member;

said rate of user actuation is a rotational speed of said rotational member; and

said data file navigation rate is a scroll rate.

10. The method of claim 9, wherein said rotational member comprises a wheel.

11. The method of claim 9, further comprising the steps of:

monitoring a direction of rotation of the rotational member; and

fixing the scroll rate at a default value for a predetermined amount of time when the direction of rotation of the rotational member changes.

12. The method of claim 9, wherein a first exponential function is used when scrolling in a first direction and a second exponential function, different from said first exponential function, is used when scrolling in a second direction.

13. A computer readable medium storing computer readable instructions that perform the method of claim 7.

14. A method for controlling scrolling of a display of a data processing system, comprising:

detecting a current rate of user actuation of a scroll control input mechanism that generates signals causing the data processing system to scroll information displayed on the display; and

determining a scroll rate representing a navigation amount based on the current rate of user actuation as an increasing function of the detected rate of user actuation.

15. The method of claim 14, wherein detecting a current rate of user actuation comprises:

receiving a first scroll event resulting from user actuation of the scroll control input mechanism;

receiving an immediate next scroll event resulting from user actuation of the scroll control input mechanism; and

determining an amount of time lapsed between the first and next scroll events,

wherein determining the scroll rate representing a navigation amount is based on the amount of time.

16. The method of claim 14, wherein the function is an exponential function.

17. The method of claim 14, wherein the determining step comprises rounding the scroll rate up to a predetermined level when the scroll rate would otherwise be less than the predetermined level.

18. The method of claim 14, wherein the user-actuated scroll control input mechanism comprises a rotational member, and further comprising:

monitoring a direction of rotation of the rotational member; and

when the direction of rotation of the rotational member changes, fixing the scroll rate at a default value for a predetermined amount of time.

19. The method according to claim 14, further comprising:

monitoring a direction of actuation of the scroll control input mechanism; and

wherein a first function is used when actuating the scroll control input mechanism in a first direction and a second function, different from said first function, is used when actuating the scroll control input mechanism in a second direction.

20. A computer readable medium storing computer readable instructions that, when executed by a processor, perform the method of claim 14.

21. A computer readable medium storing computer readable instructions that, when executed by a processor, perform a method for controlling scrolling of a display, comprising:

detecting a first scroll input event caused by a user of a multidirectional input device;

detecting a second scroll input event caused by the user of the multidirectional input device;

determining a rate of user actuation of the multidirectional input device by measuring an amount of time between the first scroll input event and the second scroll input event; and

determining a scroll rate based on the measured amount of time, said scroll rate representing an amount of scrolling to be performed based on the second input event.

22. The computer readable medium of claim 21, wherein the computer executable instructions further comprise:

detecting a third scroll input event caused by the user of the multidirectional input device;

determining a new rate of user actuation of the multidirectional input device by measuring an amount of time between the second scroll input event and the third scroll input event; and

determining a new scroll rate based on the measured amount of time between the second and third scroll input events, said new scroll rate representing an amount of scrolling to be performed based on the third input event.

23. The computer readable medium of claim 21, wherein determining the scroll rate comprises calculating the scroll rate using an exponential function.

24. The computer readable medium of claim 21, wherein determining the scroll rate comprises rounding the scroll rate up to a predetermined level when the scroll rate would otherwise be less than the predetermined level.

25. The computer readable medium of claim 21, wherein the scroll rate comprises a line scroll rate.

26. The computer readable medium of claim 23, wherein determining the scroll rate comprises using a first exponential function when the multidirectional input device is actuated in first direction, and using a second exponential function, different from said first exponential function, when the multidirectional input device is actuated in a second direction.

27. A method of performing accelerated vertical scrolling of a computer display, comprising the step of scrolling an amount directly based on a current speed with which a user actuates a multidirectional input device.

28. A method of scrolling information on a computer display, comprising scrolling a vertical amount based on a current velocity of a multidirectional input device actuated by a user of the multidimensional input device.

29. A method for accelerated data navigation, comprising the steps of:

determining a rate of user actuation of a multidirectional user-actuated input mechanism; and

converting the rate of user actuation into a navigation rate according to an acceleration curve.

30. The method of claim 29, further comprising the step of detecting a direction of user actuation of the multidirectional user-actuated input mechanism,

wherein the converting step comprises using a first acceleration curve when the multidirectional user-actuated input mechanism is actuated in a first direction, and using a second acceleration curve when the multidirectional user-actuated input mechanism is actuated in a second direction.

31. The method of claim 29, wherein the converting step comprises rounding up the navigation rate to a predetermined amount when it would otherwise be below the predetermined amount.

32. The method of claim 29, further comprising the step of detecting a direction of user actuation of the multidirectional user-actuated input mechanism, and

wherein the converting step comprises forcing the navigation rate to a default value for a predetermined amount of time upon detecting a change in direction of user actuation.

33. A system comprising:

an input device connected to a computer, the input device comprising a bi-directional scrolling input mechanism;

the computer comprising an input device driver for performing accelerated scrolling by determining a scroll amount based on a direction and rate of user actuation of the bi-directional scrolling input mechanism, and outputting the scroll amount to a display controller for scrolling content on a display connected to the computer.